UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,508	03/11/2004	Peter W. Farrett	CHA920030027US1	6406

45095   7590   09/28/2009
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ART UNIT	PAPER NUMBER
2156	

NOTIFICATION DATE	DELIVERY MODE
09/28/2009	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte PETER W. FARRETT

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Appeal 2009-002028
Application 10/798,508[1]
Technology Center 2100

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Decided: September 25, 2009

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Before LEE E. BARRETT, ST. JOHN COURTENAY III, and
CAROLYN D. THOMAS, *Administrative Patent Judges.*

BARRETT, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the final
rejection of claims 1-15. We have jurisdiction pursuant to 35 U.S.C. § 6(b).

We reverse.

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[1] Filed March 11, 2004, titled "Search Engine Providing Match and
Alternative Answers Using Cumulative Probability Values." The real party
in interest is International Business Machines Corporation.

STATEMENT OF THE CASE

The invention

The present invention relates generally to search engines, and more particularly, to a search engine for a knowledge base that is capable of determining a match answer and an alternative answer based on a history record of cumulative probability values. Spec. 1.

Conventional search engines are located on a server side of a client-server environment. As a result, application of these search engines relative to knowledge bases that are located client-side is very difficult. For example, a knowledge base loaded to a portable digital assistant is incapable of searching unless communicable with a server-side search engine. Spec. 1.

The invention provides a search system and method that may be implemented in a client-side environment and creates user preferences relative to a knowledge base. Spec. 2. The knowledge base comprises a plurality of possible "answer objects," each including a category (four categories are shown for example), one or more target words, a description, and a URL, as shown in Figure 2. A target word may appear in many different answer objects. The invention seeks to limit the number of answers generated by the search engine to two answers, a "match answer" and an "alternative answer," based on recorded user preferences. Spec. 5.

The search engine includes a primary search that searches at a random location in the knowledge base. The first answer object containing the search term in the target words has a URL corresponding to the "match

answer" and the category of the object is a "match answer category." An "alternative answer category" is selected based on a look-up association for the match answer. Once the alternative answer category is selected, a secondary search occurs beginning at a second random location in the knowledge base 36. The secondary search searches for the search term only in answer objects that belong to the alternative answer category. When a hit occurs, the "alternative answer" URL is output. Spec. 6.

The claims

Illustrative claim 1 is reproduced below:

1.   A computerized method for searching a knowledge base database having a plurality of answer objects for a match answer and an alternative answer and providing the match answer and alternative answer, comprising:

inputting a search term;

beginning a search at a random location in the knowledge base to identify the match answer;

outputting the match answer;

determining a match answer category from the match answer;

determining a look-up association based on the match answer category and a search history table;

inputting the look-up association into an alternative answer probability table to identify an alternative answer category;

performing a secondary search at a second random location in the knowledge base to find the alternative answer that only belongs to the alternative answer category; and

outputting the alternative answer.

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The references

Bowman	6,006,225	Dec. 21, 1999
Pak	US 2004/0260534	Dec. 23, 2004
		(filed Jun. 19, 2003)

The rejections

Claims 1-3, 6-9, and 11-13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Bowman.

Claims 4, 5, 10, 14, and 15 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bowman and Pak.

COMMENTS

Appellant's description of the invention, as we understand it, appears to have some inconsistencies. Although these do not interfere with our understanding of the claim, we make these comments for completeness.

The two digit associations in Figures 3 and 4 refer to associations between a match answer category (the first digit) and an alternative answer category (the second digit); e.g., "1-2" refers to an association between match category "1" and alternative answer category "2." In the history table of Figure 3, each heading "(1) Marketing," "(2) Products," etc., apparently refers to a match answer category, and the entries along the y-axis refer to all of the alternative answer associations, e.g., 1-1, 1-2, etc.

It would seem that the associations "1-1," "1-2," "1-3," and "1-4," would only have entries under the "(1) Marketing" match answer category. It is not clear why a "1-4" association has entries under the "(2) Products"

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and "(4) Other" category, since these would be "1-2" and "1-4" associations. That is, it seems that there should only be two columns, one for "Association" and one for whether there is an association.

It is not clear why the Figures show associations of a category with itself, i.e., the entries "1-1," "2-2," "3-3," and "4-4," since these are not associations between an answer category and an alternative answer category.

It is not clear how the history table entries are updated. It appears that the association between a match answer category and an alternative answer category is fixed, so if there is a "1-2" association, as described in the Specification at page 8, the counts are always going to be in this cell and there are never going to be, say, a "1-3" association. We do not find any description of the association being set by a user.

PRINCIPLES OF LAW

"Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim." *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

Obviousness requires that the combination of references teach or suggest to a person of ordinary skill in the art all of the claim limitations. 35 U.S.C. § 103(a).

Arguments not made are considered waived. *Cf. In re Baxter Travenol Labs.*, 952 F.2d 388, 391 (Fed. Cir. 1991) ("It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art."); *In re Wiechert*,

370 F.2d 927, 936 (CCPA 1967) ("This court has uniformly followed the sound rule that an issue raised below which is not argued in this court, even if it has been properly brought here by a reason of appeal, is regarded as abandoned and will not be considered. It is our function as a court to decide disputed issues, not to create them."); *In re Wiseman*, 596 F.2d 1019, 1022 (CCPA 1979) (arguments must first be presented to the Board before they can be argued on appeal).

ANTICIPATION

Issues

Appellant argues two limitations. Thus the issues are:

Has Appellant shown that the Examiner erred in finding that Bowman teaches: (1) "inputting the look-up association into an *alternative answer probability* table to identify an *alternative answer category*" wherein the look-up association is determined "based on the match answer *category* and a search history table" (emphasis by Appellant); and (2) "performing a secondary search at a second random location in the knowledge base to find the alternative answer that *only* belongs to the alternative answer category" (emphasis by Appellant) wherein the alternative answer category is identified via "inputting the look-up association into an alternative answer probability table"?

These limitations are found in independent claims 1 and 11. Independent claim 6 is broader, e.g., it does not recite a "match answer category." The differences will be addressed in the analysis.

Contentions

Issue (1)

As to identifying an alternative answer category, the Examiner refers to column 10, lines 25-33, and Figures 5A, 5B. Final Rej. 4.

Appellant argues that there is clearly no inputting of a look-up association into the mappings in Figures 5A and 5B. Br. 6.

Appellant argues that Bowman merely discloses maintaining a "correlation score" for each related term based on the number of times the related term occurred in combination with the key term and there is no clear teaching of an alternate answer probability table. Br. 6.

Appellant argues that it is not clear which items in Figures 5A and 5B correspond to a match answer; a match answer category; a look-up association; a search history table; an alternative answer probability table; an alternative answer category; and/or an alternative answer. Br. 6.

The Examiner finds that Bowman teaches search queries can be modified based on historical user submissions, where the search result would be returned to the user alongside new queries that the user could submit. Ans. 11. Those new queries were obtained through the correlation process which the Examiner finds to be the "look-up association" and the "search history table." *Id.*

Issue (2)

As to performing a secondary search, the Examiner cites column 13, line 63 to column 14, line 12, and Figures 5B and 9. Final Rej. 5.

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Appellant argues that the cited section merely discloses combining an original query term with a respective related term and does not teach performing a secondary search to find the alternative answer that only belongs to the alternative answer category. Br. 7.

Appellant argues it is not clear what specifically in Bowman is a teaching of a secondary search; a second random location; an alternative answer; an alternative answer category; an alternative answer probability table; a look-up association; and/or an alternative answer that only belong to the alternative answer category. Br. 7.

The Examiner responds that the whole purpose of Bowman is the refine a first query into a second query to get different and hopefully better results. It is argued that Figure 5B shows correlation data after a user query submission and results in stronger associations between query terms and that the queries can be ranked based on the correlation data. Ans. 11-12.

Findings of fact

Bowman describes a search engine which suggests related terms to a the user to allow the user to refine a search. Abstract.

The related terms are generated using query term correlation data which reflects the frequencies with which specific terms have previously appeared in the same query. Abstract. The correlation data is generated and stored in a look-up table. *Id.*

The look-up table 137B is shown in Figure 5B. Key terms 140 represent search query terms. Related terms in the related terms list 142

represent terms that have occurred in combination with the key term. The single-character field prefix indicates the search field to which the term corresponds, e.g., A=author, T=Title, S=Subject, etc. Each related term is stored together with a correlation score 146 which indicates the number of times the related term has appeared in combination with the key term within the search fields indicated by the prefixes. Col. 6, l. 59 to col. 7, l 3.

For example, for a single-term query, the selection process would retrieve the top X terms from table 5B for the key term. For a query of "TRAIL" in the subject field, the selection process would look up the key term "S-TRAIL" and select the top X related terms with an "S" prefix. If X=3, the related terms with the top values would be "MIX," "YUKON," and "BIKE" as shown in Figure 8A. Col. 13, ll. 11-23.

Analysis

We agree with Appellant that it is not clear how the Examiner proposes mapping the various limitations of the claims onto Bowman, in particular, the limitations of: a random location; a match answer category; a look-up association; a search history table; an alternative answer probability table; an alternative answer category; and performing a secondary search at a second random location for an alternative answer that only belongs to the alternative answer category. Nevertheless, we step through the claim and try to identify the correspondence as best we can.

Bowman unquestionably teaches "inputting a search term."

Bowman teaches searching to find answers, but does not teach "beginning a search at a random location" as required by the limitation of "beginning a search at a random location in the knowledge base to identify the match answer," or at least the Examiner has not explained how it does. Claim 6 does not recite a "random location," but does recite a "first location" which is different from a "second location" and this limitation is also not addressed in the rejection. Nevertheless, these limitations are not argued.

Bowman teaches "outputting the match answer" as "results" in Figure 9. Bowman teaches outputting more than one match answer, but this is not argued and does not appear to be precluded by the claim language.

The Examiner appears to find that "determining a match answer category from the match answer" corresponds to the prefixes indicating certain search fields (A=author, T=title, etc., col. 6, ll. 59-64). Ans. 3. While Bowman searches for match answers in these search fields (categories) in the database, Bowman does not determine a match answer category <u>from</u> the match answer as claimed. This step corresponds to the disclosure of searching for target word in the answer objects and, once found, determining both the category of the object in which the target word is found and a match answer (the URL).

The query correlation table 137 (137A in Figure 5A and 137B in Figure 5B) can be considered a "search history table" in the sense that it represents a history of searches (queries) over several days. However, it does not have the characteristics of the claimed "search history table." The limitation "determining a look-up association based on the match answer

category and a search history table" does not recite what the "association" is, except implicitly by the later limitation that the secondary search is in an alternative answer category, but the limitation requires that a "match answer category" is used to look up the "association" in the "search history table." Table 137 is not a "search history table" as claimed because a "match answer category" is not used to look up an "association" (or at least the Examiner has not explained how it is). While there is some "association" represented by table 137, i.e., the "related terms" in related terms list 142 occur in combination with the key term 140 in a query, it is not an association "based on the match answer category." Again, it is noted that Bowman conducts a query in certain search field (category) and does not determine a category _from_ a match answer, as claimed.

Examiner apparently interprets the "correlation score" in table 137 to be an "alternative answer probability" as recited in the limitation "inputting the look-up association into an alternative answer probability table to identify an alternative answer category." Since the value in the correlation score is related to the number of times a "related term" occurs together with the "key term" in a query, it is related to probability, i.e., each correlation score could be divided by the sum of the correlation scores in the column to provide actual probabilities rather than numbers; just as the probabilities in Appellant's Figure 4 are normalized values of the numbers in Figure 3. However, the Examiner does not explain how table 137 converts an "association based on the match answer category" to an "alternative answer category," and what constitutes the "association" or the "match answer

category" or the "alternative answer category." A "category" could be one of the search fields (Subject, Title, Author, etc.), so "query" terms are associated with "categories," but Bowman does not look up a "alternative answer category" based on an "association" based on a previous "match answer category." The "related terms" in table 137 are not categories, but are "query" terms associated with query "key terms." Thus, as to Issue (1), we find that Bowman does not teach "inputting the look-up association into an alternative answer probability table to identify an alternative answer category" wherein the look-up association is determined "based on the match answer category and a search history table."

The Examiner interprets "performing a secondary search at a second random location in the knowledge base to find the alternative answer that only belongs to the alternative answer category" to correspond to performing a search with the "related terms." For example, in Figure 9 the related terms "bike," "sports," and "vacation" overlap the key terms "outdoor" and "trail" in Figure 5B in the category "S=subject." We presume the Examiner interprets the "alternative answer" to be the result of the search on one of the related terms. The Examiner does not explain how Bowman teaches performing the search "at a second random location." Nevertheless, this limitation is not argued. The Examiner does not explain what constitutes the "alternative answer category." In Bowman, the related terms are all in the same category "S=Subject" as the query term. The Examiner also does not explain how Bowman teaches searching "to find the alternative answer that only belongs to the alternative answer category." Thus, as to Issue (2), we

find that Bowman does not teach "performing a secondary search at a second random location in the knowledge base to find the alternative answer that only belongs to the alternative answer category," wherein the alternative answer category is identified via "inputting the look-up association into an alternative answer probability table."

Claim 6 does not recite searching at two "random locations," but does require performing a first search at a first location and performing a second search at a second location. The Examiner does not explain where this is taught by Bowman. Claim 6 also does not recite a "match answer category" or "determining a look-up association based on the match answer category." Nevertheless, Bowman does not teach at least performing a second search "to find an alternative answer, wherein the alternative answer belongs to an alternative answer category determined by inputting a look-up association into an alternative answer probability table, wherein the look-up association is based on a search history table," because it does not teach an "alternative answer category," a "look-up association," or the "look-up association is based on a search history table" as discussed above.

Conclusion

Appellant has shown that the Examiner erred in finding that Bowman teaches: (1) "inputting the look-up association into an alternative answer probability table to identify an alternative answer category" wherein the look-up association is determined "based on the match answer category and a search history table"; and (2) "performing a secondary search at a second

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random location in the knowledge base to find the alternative answer that only belongs to the alternative answer category" wherein the alternative answer category is identified via "inputting the look-up association into an alternative answer probability table" in independent claims 1 and 11. Comparable limitations are found in independent claim 6. Accordingly, the anticipation rejection of claims 1-3, 6-9, and 11-13 is reversed.

OBVIOUSNESS

The Examiner relies on Pak for teaching of natural language. Pak is not relied upon for the limitations in the independent claims which are found to be missing in Bowman. Accordingly, the obviousness rejection of claims 4, 5, 10, 14, and 15 is reversed.

CONCLUSION

The rejection of claims 1-3, 6-9, and 11-13 under 35 U.S.C. § 102(b) is reversed.

The rejection of claims 4, 5, 10, 14, and 15 under 35 U.S.C. § 103(a) is reversed.

<u>REVERSED</u>

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